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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,637	07/31/2001	Hiroshi Hatano	32577202630	1581

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EXAMINER

LEE, PATRICK J

ART UNIT PAPER NUMBER

2878

DATE MAILED: 02/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,637

Applicant(s)

HATANO ET AL.

Examiner

Patrick J. Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-15, 26, 27, 41-55, 57 and 58 is/are allowed.
- 6) ☒ Claim(s) 1-4, 16-25, 28-40 and 56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:

In paragraph [0247] on page 50, "801a" should read "811a".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 16 & 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al WO 99/27532. With respect to claim 16, Lee et al disclose a catadioptric optical system, which has an optical element (20) comprising of a first reflecting surface (205) and a second reflecting surface (203). Entering light (10) first strikes the surface (205) and then the second surface (203), before focusing at point (204).

With respect to claim 28, Lee et al teach the solid immersion device as also described in claim 16 incorporated into an optical disk drive system. The system also includes a laser diode (81) as a light source, collimating lens (82) and beam splitter (83) combined as an optical system, with swing arm (89) and swing arm actuator (90) providing a mechanism by which the solid immersion mirror device can scan optical disk (86).

5. Claims 29-31 & 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al 6,185,051. With respect to claims 29-31, Chen et al teach an optical focusing system for optical data storage. The system has a focusing device (50) in which collimated light (135) enters the medium at upper surface (100), strikes reflective side (110), and then is focused at point (162). Reflective side (110) is parabola shaped (see column 5, lines 4-6).

With respect to claim 37, Chen et al disclose another focusing device (700) in which divergent laser beam (135) strikes incident surface (775) and proceeds to reflect off reflective side (710). The beam is focused at the bottom surface (705) at focal spot (162), see column 9, lines (28-34).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-4, 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al WO 99/27532 in view of Medina Puerto et al 5,638,219.

With respect to claims 1-2, 17-18, Lee et al teach the immersion device behind the rejection of claim 16, with collimated light (10) entering the device. However, the optical device does not have a flat upper surface and a curved lower surface produced by a parabola. Medina Puerto et al teach an optical device with a flat upper surface (6) and a curved lower surface (3) that includes reflective element (4). To modify Lee et al according to Medina Puerto et al would have been obvious to one of ordinary skill in the art and a mere matter of obvious design choice because the optical device taught by Medina Puerto et al is capable of proper reflection of light while obtaining good results in terms of sharpness, luminosity, and looking angle.

With respect to claims 3-4 & 23-24, the use of masks with minute openings is known and would have been obvious to do so in order for the light to be properly

focused at the light focusing spot. This would then allow for accurate performance of the optical scanning and recording device.

With respect to claim 19, the use of coatings to selectively transmit light with a small incident angle is known and would have been obvious to do so in order to prevent light with a small incident angle from interfering with the focusing aspect of the optical device, the desired end result of the device being producing a focused beam of light at the focusing point.

With respect to claims 20-21, Lee et al does not dispose the second reflective surface inside of the said medium, but it would have been a mere matter of obvious design choice to do so as modifying Lee et al accordingly would provide protection to the second reflective surface. Lee et al already teach the first reflective surface (205) to be flat, with second reflective surface (203) to be curved in a parabolic shape.

With respect to claim 22, the use of light polarization elements is known and would have been obvious to modify Lee et al accordingly in order for the accurate performance of the optical device by providing light in a specific polarization direction.

With respect to claim 25, Lee et al teach the components allowing the light focusing device (20) to be incorporated in a reproduction apparatus as mentioned in the discussion of claim 28.

9. Claims 32-35,38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al 6,185,051. With respect to claims 32-35, Chen et al teach the solid immersion device with the side-reflecting surface, but does not explicitly state the refractive index being not less than $1/\sin \theta$, the light interception and conversion

components, and a mask. However, all of these are known and would have been obvious to one of ordinary skill in the art as these modifications allow for the prevention of stray light from affecting the device's ability to produce a focused beam of light.

With respect to claim 38, to make the reflecting side surface ellipsoidal would have been a mere matter of obvious design choice as it would have been for a specific application (see column 4, line 61 - column 5, line 6).

With respect to claims 39-40, the use of masks and minute openings is known and would have been obvious to one of ordinary skill for it would have enhanced the devices ability to focus the beam of light.

10. Claims 36 & 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al 6,185,051 in view of Lee et al WO 99/27532. Chen et al disclose the optical focusing device with the upper surface (100, 775) and a side-reflecting surface (110, 710). The light incident (135) can either be collimated or divergent depending on the situation. However, Chen et al does not disclose the other components required for an optical scanning and recording apparatus. Lee et al disclose these components as explained in the discussion of claim 28. The optical focusing device disclosed by Chen et al is for use in data storage systems and modifying the teachings of Chen et al with those of Lee et al would have been obvious for it would allow the application of the device invented Chen et al for use in optical storage.

Allowable Subject Matter

11. Claims 5-15, 26-27, 41-55, & 57-58 are allowed over the prior art.

12. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 5 & 26, the second reflecting surface being conical is not taught by the prior art and would not have been readily obvious. As a result, independent claims 5 & 26 and dependent claims 6-9 are allowed over the prior art.

With respect to claims 10 & 27, the prior art does not teach the first reflecting surface having a substantially annular shape, and doing so would not have been readily obvious. As a result, independent claims 10 & 27 and dependent claims 11-15 are allowed over the prior art.

With respect to claims 41 & 57, the prior art does not teach divergent light reflecting off the two surfaces shaped as described in the claim. As a result, independent claims 41 & 57 and dependent claims 42-44 are allowed over the prior art.

With respect to claim 45 & 58, the prior art does not teach divergent light entering the medium from the light incident point and subsequently being reflected off the two reflecting surfaces to be later focused at the light focusing point. As a result, independent claims 45 & 58 and dependent claims 46-55 are allowed over the prior art.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sato 6,236,514 discloses an optical head device.

Lee et al 6,266,315 disclose a catadioptric optical system.

Oh et al 6,493,156 disclose a high-resolution lens.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (703) 305-3871. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9558 for regular communications and (703) 306-5511 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Patrick J. Lee
Examiner
Art Unit 2878

PJL

February 3, 2003


DAVID PORTA
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